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molar differs remarkably from that of *M. Jeffersonii* and *M. dissimilis*, as is also the case compared with that of *Lestodon armatus* and *L. myloides* of Buenos Ayres. In transverse section it is reniform or crescentic with blunt poles, and the biting extremity appears to have been worn off in the same manner as the incisors of a Rodent, to which, indeed, the jaw appears first to have been supposed to belong. The species may be named MEGALONYX RODENS, or, if the peculiarities of the caniniform molar be regarded generically distinct from those of *Megalonyx* and *Lestodon*, it may be named MEGALOCNUS RODENS.

EMYS SOMBRERENSIS, n. s.

The bones of extinct species of turtle are not unfrequently found in the so-called Sombrero guano, Sombrerite or Ossite, a material rich in phosphate of lime, largely mined in the island of Sombrero, W. I., and used in the preparation of a fertilizer for agricultural purposes. In a mass of this material presented to the museum of the Academy (see Proc. 1859, 111), the posterior part of the plastron of a species of *Emys*, or perhaps *Testudo*, is perceived, for which the above name is proposed. The specimen consists of both xiphisternals and the greater portion of both hyposternals, articulated in natural juxtaposition. Other fragments of the plastron and carapace, together with a portion of a thigh bone, are also contained in the mass. The specimen indicates the sternum to have approximated a foot in length; and the breadth at the lateral sutures of the hyposternals has been about 7½ inches. The under surface of the sternum is flat and smooth; and laterally it curves but slightly upward. The posterior sternal notch is two-thirds as deep as the width, and almost forms an equilateral triangle. The postero-lateral border from the inguinal notch to the rounded triangular ends of the xiphisternals, is bow-like, or presents two concavities with an intervening convexity. The caudal scutes are small, reaching slightly beyond the bottom of the sternal notch. The femoral scutes are on a level with the inguinal notches. Estimated length of hyposternals in the median suture 35 lines; breadth 45 lines. Length of xiphisternals in median suture 17 lines; greatest length about middle 25 lines; breadth along anterior suture 28 lines. Length of caudal scutes internally 13 lines; externally 10 lines. Length of femoral scute internally 25 lines. The bones present about the ordinary proportion of thickness observed in emydes.

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## *July 7th*, 1868.

DR. BRIDGES in the Chair.

Twenty-one members present.

The following papers were presented for publication:

"Notice of some remains of Horses." By Joseph Leidy, M.D.

"Notice of some extinct Cetaceans." By Joseph Leidy, M.D.

"Mitchella repens; a Diœcious plant." By Thomas Meehan.

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## *July 14th.*

The President, DR. HAYS, in the Chair.

Nineteen members present.

The following papers were presented for publication:

"Second contribution to the history of the Vertebrata of the Miocene period of the United States." By Edw. D. Cope.

"Remarks on Conosaurus." By Joseph Leidy, M.D.

"Remarks on a jaw fragment of Megalosaurus." Jos. Leidy, M.D.

E. D. Cope exhibited the vertebra of an extinct reptile, from the middle green sand bed of New Jersey; which possessed the peculiar articular structure known as the zygantrum and zygosphen. He said the form was in some degree like that of certain modern terrestrial genera of Iguanidæ, as the genus Euphryne, Baird, but it appeared to have some affinity to Macrosaurus, Owen, in form. The animals, if similar in proportions to the Iguanæ, would have been some twelve feet in length. It was called CLIDASTES IGUANAVUS.

A Mosasauroid reptile was indicated also by a single vertebra from Medford, N. J., also from the middle bed. It was distinguished from other forms of the family by its compressed elevated form. It was assigned to a species named NECTOPORTHEUS VALIDUS.

The structure of the vertebral column in Elasmosaurus was pointed out. It was stated to possess apparently no zygapophyses throughout its whole length, but in place of these, the zygosphen and zygantrum articulation. The articulations of the vertebræ were therefore the reverse in respect to direction of their surfaces from the usual form among vertebrata. In fact the structure of the genus was shown to be entirely new and peculiar among vertebrated animals. The genus Cimoliasaurus, Leidy, was stated to exhibit the same structure, and required that the vertebræ should be reversed in order to read their connections correctly.

Thomas Meehan said he had proposed to himself to contribute a paper to the American Academy of Science which meets next month in Chicago, on the leaves of Coniferæ; but some friends here acquainted with his intention, and interested in the facts, were desirous he should explain to them some of the leading points, which he would with pleasure do.

His chief position was that what are usually considered the leaves of Coniferæ are but a part, and frequently the least important part of the true leaves, which are either mostly adherent or mostly free according to the vigor of the branch or individual plant, and not according to any specifically constitutional character; and that a recognition of this fact is of great importance in determining the limits of genera, species and varieties of the Order. He exhibited specimens of the *Larix Europœa*, pointing out that it had two classes of leaves, the one entirely free, the other mostly adnate to the stems. The adnate leaves were on the elongated shoots, the free leaves on the arrested shoots or verticills; on the elongated shoots the leaves also had a power of elongation, and produced the green awl-shaped points we commonly called leaves. On the arrested shoots or spurs, the leaves had no power of elongation. They were obtuse, rather spatulate, just the same as the adnate portion—the true leaves—on the stem. The theory he deduced from this was that *adnation was a characteristic of vigor; free leaves a condition of weakness or arrested growth.* This explained the polymorphous character of many Coniferæ. The rule operated through many genera. He exhibited strong branches of *Cryptomeria japonica*, on which the leaves were united for four-fifths their length, and weaker ones on which four-fifths were free, &c. The same occurs on *Juniperus virginiana*, *Juniperus communis*, *Thuja orientalis*, *T. occidentalis*, and other species. Wherever the shoots were delicate, either constitutionally or by growing in the interior of the plant and deprived of their due share of light, the leaves were free; wherever the contrary existed, and the shoots were vigorous, adnation in a greater or less degree prevailed. In many species this polymorphous condition could be produced at will, by weakening the plant. Cuttings of *Thujopsis borealis* made from branches with adnate leaves, would throw out shoots with free leaves until they were very well rooted and able to throw out vigorous shoots.

A test of vigor was the power to branch. Only on vigorous maturity did the branching age of trees commence. Arbor vitæs, when mature, pushed out branches from the axils of every other pair of leaves. This gave them their fan-like appearance. When young they branched little, and this stage was always marked by more or less free leaves. *Thuja ericoides* of gardens, with its heath-like foliage, was a weakly constituted form, which retained its childhood foliage, and had little disposition to branch. *Thuja meldensis* of Lindley, which from its peculiar appearance that learned author supposed to be a hybrid between the red cedar and Chinese arbor vitæ, was a form of intermediate vigor, branching moderately, and leaves intermediately adnate. *Retinispora ericoides* of Zuccarini, was also a weak form with free leaves, the well developed form of which he had had no opportunity to trace with certainty. *Taxodium distichum* Richard, and *Glyptostrobus sinensis* Endl., were no doubt the same thing. He showed, by the vigorous branching character of the latter, the necessity for the arrested foliation it presented, and exhibited specimens of vigorous (more branching) *Taxodium distichum* in which the leaves were abbreviated and twisted around the stem, exactly as in *Glyptostrobus*, except that the free parts were rather longer. This form did not branch quite as much as the typical *Glyptostrobus*, but more so than in the typical *Taxodium.*

He remarked that the two genera *Pinus* and *Sciodopitys* had their true leaves adpressed almost entirely to their branches, and illustrated this by specimens of *Pinus austriaca*. Instead, however, of these genera developing green free points on the apices, they pushed out rather abortive branches from the *axils* of the true leaves. The fasicles of leaves on these plants were not true leaves, but were intimately connected with the axial system of the plants. The adpressed true leaves on the pine were annual, although as dead epidermis they remained often on the bark until the regular excorticating period arrived ; but these so-called leaves, or rather metamorphosed branchlets, remained often several years. He had known some remain eight years. Their connection with the axial system could be seen by raising the bark of a three or four year old branch on the Austrian pine.

Mr. Gabb made some remarks about Kitchen Middens, in the vicinity of San Francisco and on the shores of San Francisco Bay, his attention having been called to the similarity between them and those observed by Dr. Leidy, near Cape Henlopen. He also mentioned a curious circumstance for which he had been unable to account. In various places on the coast of both Upper and Lower California, he had observed shells, often of the heavier species, scattered over the surface in great profusion, and occasionally to a distance of several miles from the beach. They were evidently of very modern origin, being strewn on the surface of the soil, but whether they had been carried there by man or birds, he had never been able to discover.

Dr. Wm. L. Wells made some observations on the mode of scattering the spores of the *Polypodium vulgare.* Under the microscope the sporangium could be seen to open at a point near its stem; and the opening grew very slowly larger, until the continuation of the stem which previously encircled the sporangium was nearly straight. It then suddenly sprang shut with a jerk, which scattered the spores in every direction, and which usually sent the sporangium itself out of focus. In the cases in which it was not thrown entirely out of focus, the same operation could be seen to be repeated two or three times. In no case were any spores scattered during the opening, which always took place very slowly.

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## *July* 21*st.*

The President, DR. HAYS, in the Chair.

Fourteen members present.

The following paper was presented for publication:

" On the Crocodilian genus Perosuchus." By Edw. D. Cope.